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CENTRAL INTELLIGENCE AGENCY

CIA/PIR-17/63
December 1963

PHOTOGRAPHIC INTELLIGENCE REPORT

PROBABLE SOLID PROPELLANTS TESTING FACILITIES AND ASSOCIATED EXPLOSIVES PLANTS IN THE USSR

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INTRODUCTION

Highly significant installations associated with the testing and production of unique explosives materials of a probable solid propellant nature have been identified at Biysk (52-31N 85-04E), Kamensk-Shakhtinskiy (48-19N 40-13E), Krasnoyarsk (56-02N 93-02E), Perm (57-58N 55-52E), and Sterlitamak (53-44N 56-00E), all in the USSR (Figure 1). These installations are identical to the extent that they are adjacent to or within explosives/munitions combines producing at least two explosives bases, and each has at least one test cell with a concrete-faced probable bunker/deflector. A total of eight test cells have been identified at the five sites.

Photography of these installations is provided by [redacted] missions occurring between [redacted] The quality and small scale of this photography preclude the determination of exact measurements and the assigning of definite functions to most of the buildings. Measurements of these facilities should be considered approximate, although in all cases scale factors were provided by TID/NPIC; where utilized, height factors were also provided by TID/NPIC.

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For the purpose of this report, details on the Kamensk-Shakhtinskiy facility will not be included because of a lack of interpretable photography of the site.

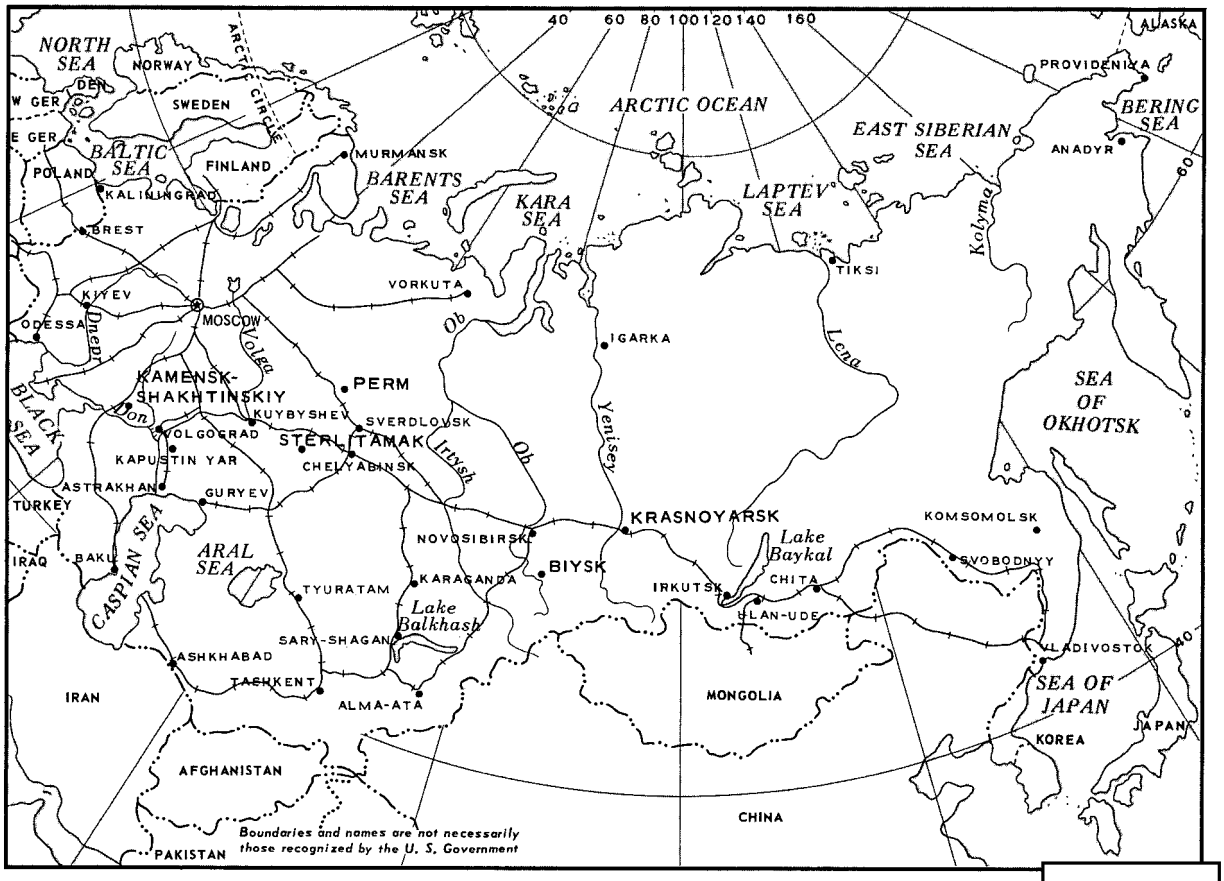

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FIGURE 1. LOCATION OF PROBABLE SOLID PROPELLANTS TEST FACILITIES, USSR.

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CHRONOLOGY

These facilities appear to be of recent construction, although only the Biysk facility can be negated on recent photography; it was not present in [redacted] The existence of the other four cannot be negated on any available [redacted] photography. The Sterlitamak and Kamensk-Shakhtinskiy facilities can be negated on captured [redacted] photography of [redacted] but the facilities at Perm and Krasnoyarsk cannot be negated on any available photography.

Confirmation of completion can be made at three of the facilities: Krasnoyarsk [redacted] Perm [redacted] and Sterlitamak [redacted] the test facilities at Biysk and Kamensk-Shakhtinskiy cannot be confirmed as complete. Criteria for confirmation would include: relative completion of the plant and storage facilities; paving of the large, concrete-faced probable bunker/deflectors; and completion of the support structures within the test facility.

TEST FACILITIES

BIYSK

The Biysk Probable Solid Propellants Test Facility (Figure 2) is located approximately 5 nautical miles (nm) west of the center of Biysk, USSR. The test facility is road and possibly rail served, and its area of 2,800 by 2,700 feet is secured by a single fence. The facility consists of two completed test cells and a probable third which appears under construction on photography of [redacted] the cells are annotated A, B, and C on Figure 2. A perspective sketch (Figure 3) presents an artist's concept of an oblique view of the test facility. Approximate dimensions of various structures at the Biysk facility can be found in Table 1 which is keyed to Figure 2.

One of the salient recognition features at the Biysk facility is a multi-level H-shaped building (item 1, Figure 2). This structure is similar in appearance and probably identical in function to H-shaped buildings at Krasnoyarsk and Sterlitamak. Because of the unusual configuration, it has been suggested that this building is possibly as many as six different buildings separated by possible blast walls. This structure was noted under construction in [redacted] and confirmed as complete by [redacted]

A second significant feature of the facility is the presence of the two completed test cells and the probable third under construction. Cells A and B are approximately 710 feet apart, and cells B and C are about 990 feet apart; the relative positions of the three within the facility can be seen on Figure 2.

Table 1. Associated Structures, Biysk Probable Solid Propellants Test Facility (item numbers are keyed to Figure 2)

Item	Dimensions (ft)	Item	Dimensions (ft)
1		10	230 x 65
a	310 x 85	11	230 x 65
b	95 x 90	12	240 x 65
c	140 x 75	13	145 x 65
d	160 x 75	14	85 x 45
e	120 x 70	15	65 x 65
2	125 x 40	16	40 x 40
3	125 x 125	17	90 x 55
4	80 x 80	18	230 x 65
5	90 x 75	19	75 x 30
6	85 x 60	20 (3)	90 x 55
7	320 x 85	21	60 x 60
8	55 x 55	22 (2)	55 x 40
9	290 x 45	23	210 x 100

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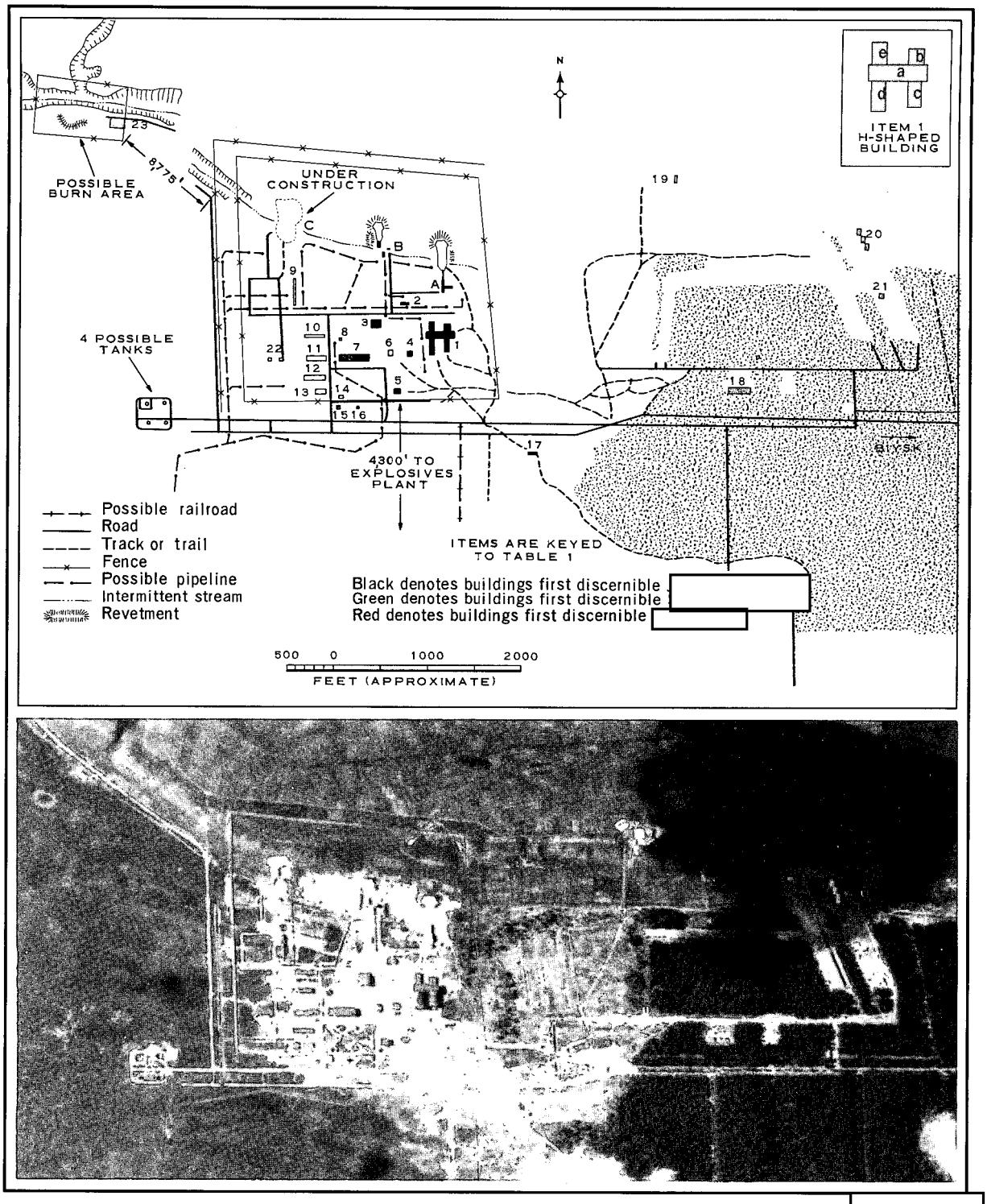

FIGURE 2. BIYSK PROBABLE SOLID PROPELLANTS TEST FACILITY AND ASSOCIATED STRUCTURES, USSR

Test cell A was observed under construction on photography of [redacted] photographic limitations, however, did not permit a confirmation of the physical presence of the cell until [redacted] Cell A is road served from its rear or south end, is in at least three sections, and measures approximately 260 feet in overall length. A large revetment appears immediately to the east of the test cell. Test cell B can be identified as under construction on photography of [redacted] and complete by that of [redacted] it has several of the same features noted at cell A. Cell B is road served from the rear, is in three sections, and has an overall length of 170 feet. A large revetment appears about 25 feet west of cell B; this revetment and the one at cell A could serve instrumentation/safety functions. Probable test cell C can be identified as under construction in [redacted] no definitive statement or measurements can be made on cell C because of the construction status.

Another salient feature at the Biysk facility (and at every other facility identified thus far) is the concrete-faced probable bunker/deflector which is observed adjacent to each test cell; each is identified with a letter to correspond with the cell it serves. Line drawings of Biysk test cells A and B, their associated probable bunker/deflectors, detailed dimensions, and profile elevation sketches can be found on Figure 4.

Probable bunker/deflector A was observed under construction concurrently with test cell A; however, the concrete facing could not be confirmed until photography of [redacted] It measures about 235 feet from its base to the front end of the test cell; the distance from the nearest end of the H-shaped building to the rear of the probable bunker/deflector is approximately 950 feet. Probable bunker/deflector B, first noted under construction in [redacted] was faced with concrete by [redacted] It measures approximately 135 feet from the base to the front of the corresponding test cell, and the distance between the rear of cell B and the rear of probable bunker/deflector B is approximately 450 feet. Probable bunker/deflector C is visible under construction on photography of [redacted]

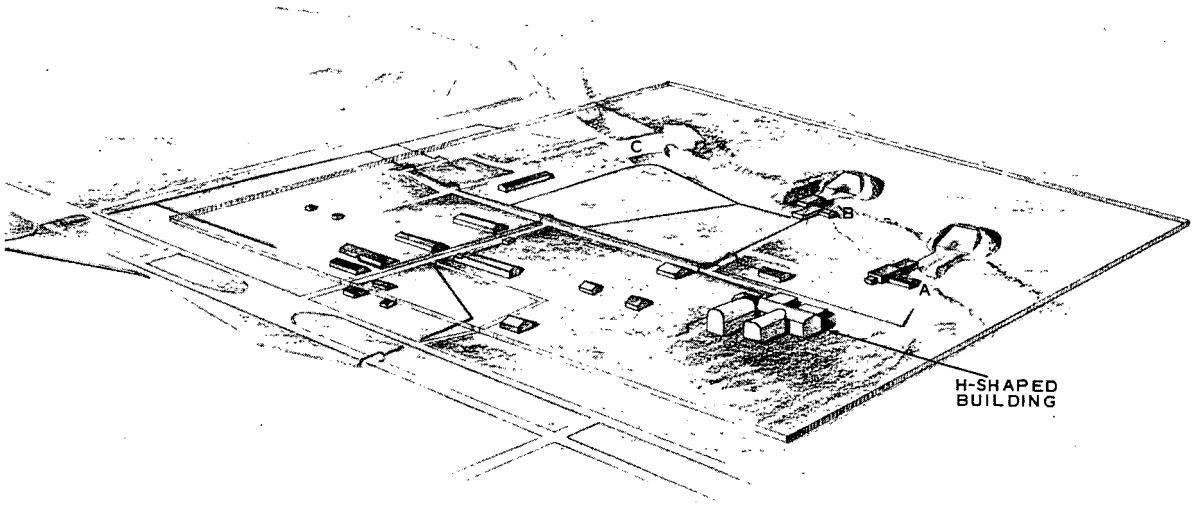

FIGURE 3. ARTIST'S CONCEPT OF TEST FACILITY, BIYSK, USSR. [redacted]

A fourth feature at the Biysk facility is the group of three offset or staggered buildings (item 20, Figure 2) approximately 4,200 feet east of the test facility; they were first observed in [redacted] These buildings are similar in appearance and probably identical in function to comparable structures at Perm, Sterlitamak, and Kamensk-Shakhtinskiy.

Another significant item at Biysk is a secured area of 1,000 by 600 feet located approximately 8,775 feet northwest of the test facility; the area is road served and was first observed in the early stages of construction in [redacted] The purpose of this unidentified area cannot be adequately explained, although a single heavy revetment suggests a possible burn area where highly combustible material is handled. A similar area is found at the Perm test facility.

KRASNOYARSK

The Krasnoyarsk Probable Solid Propellants Test Facility (Figures 5 and 6) is located near Explosives Plant 580 (not to be confused with the new plant which serves the test facility) approximately 5 nm east of the center of Krasnoyarsk, USSR. Although this facility cannot be negated on available photography, it can be determined that it was in an early/mid stage of construction by [redacted] It consists of two test cells which are approximately 600 feet apart. The Krasnoyarsk facility is road served, and the area of approximately 2,500 by 1,000 feet is double secured; one of the fences is solid.

The Krasnoyarsk test facility has an H-shaped building (item 1, Figure 6) similar in appearance and probably identical in function to the irregular structures found at Biysk and Sterlitamak. The Krasnoyarsk building appeared to be in an early stage of construction in [redacted] and its completion can be confirmed by photography of [redacted] It is approximately 65 feet high at the highest point. Approximate dimensions of this building and other

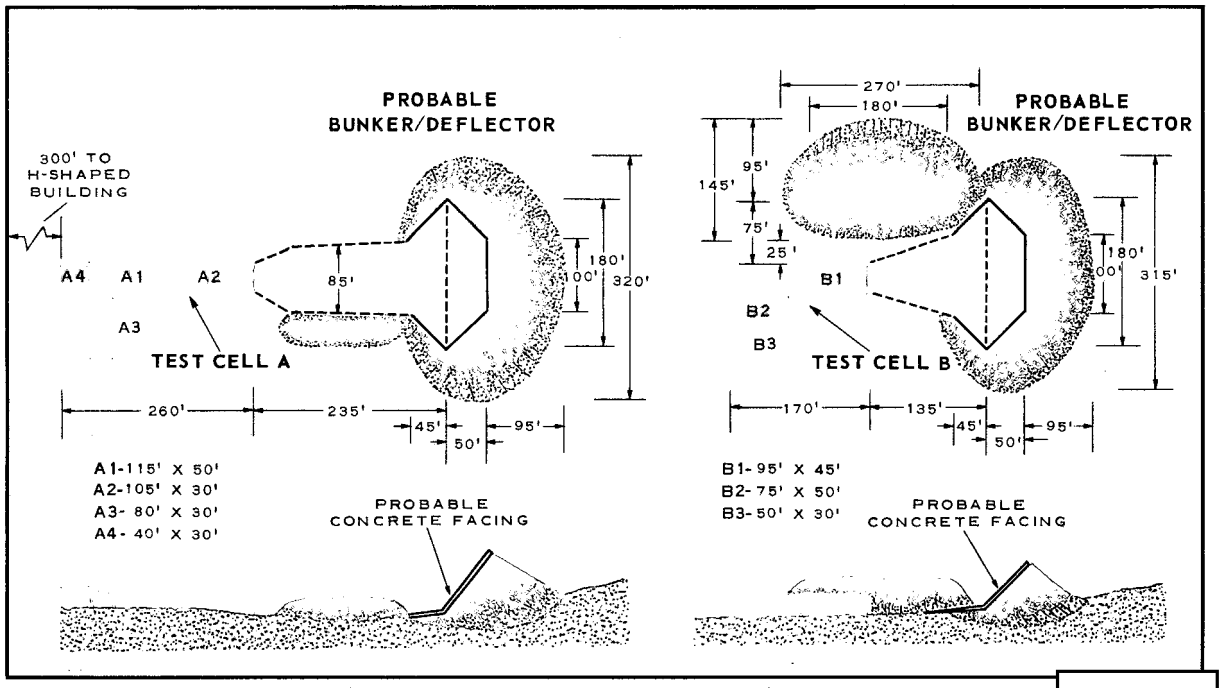

FIGURE 4. TEST CELLS A AND B AND PROBABLE BUNKER/DEFLECTORS, BIYSK, USSR. [redacted]

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FIGURE 5. KRASNOYARSK PROBABLE SOLID PROPELLANTS TEST FACILITY, USSR, [redacted] 25X1

structures at the test facility and explosives plant are given in Table 2 which is keyed to Figure 6.

The two test cells have been annotated A and B on Figure 6, which also illustrates their relative positions at the site. A perspective sketch (Figure 7) presents an artist's concept of an oblique view of the test facility.

Test cell A, the larger and newer of the two cells, was observed under construction and apparently essentially complete on photography of [redacted] The cell is in three sections, has an overall length of 250 feet, and appears to be road served from the rear. The cell is not revetted.

Test cell B, possibly the oldest of the test cells observed in the USSR thus far, appeared essentially complete in [redacted] It measures about 175 feet in overall length, is in three sections, and is connected to a revetted building approximately 300 feet to the rear of cell A by overhead piping or covered walkways. Test cell B is not revetted.

The concrete-faced probable bunker/deflector A (Figure 8) is at least 60 feet high and was first discernible under construction in [redacted] its completion can be confirmed on [redacted] photography. It measures approximately 260 feet from the base to the end of the test cell, and the distance from the nearest end of the H-shaped building to the rear of the probable bunker/deflector is about 1,400 feet. Probable bunker/deflector B (Figure 8) is approximately 45 feet high and can be confirmed as complete in [redacted] The base is about 95 feet from the front of test cell B; the distance from the rear of the cell to the rear of probable bunker/deflector B is approximately 440 feet.

A final feature at the Krasnoyarsk test facility is some scarring observed in front of test cell A on [redacted] photography. Although the funnel shape of this scar suggests

Table 2. Associated Structures, Test Facility and Explosives Plant, Krasnoyarsk (item numbers are keyed to Figure 6)

Item	Dimensions (ft)	Item	Dimensions (ft)
Test Facility			
1		2	[redacted] x 95
a	300 x 75	3	200 x 210
b	100 x 95	4	80 x 80
c	145 x 80	5	115 x 55
d	160 x 80 x 65 (h)	6	125 x 75
e	125 x 70	7	35 x 70
		8	95 x 80
Explosives Plant			
1	355 x 75	28	215 x 65
2	330 x 50	29	185 x 65
3	300 x 75	30	300 x 115
4	190 x 80	31	340 x 100
5	205 x 80	32	220 x 65
6	195 x 80	33	395 x 60
7	330 x 65 x 20 (h)	34	310 x 60
8	330 x 65 x 20 (h)	35	480 x 50
9	165 x 105 x 45 (h)	36	365 x 75
10	45 x 35	37	645 x 80
11	775 x 30 x 15 (h)	38	525 x 80
12	690 x 75 x 25 (h)	39	380 x 75
13	695 x 45	40	460 x 65
	end sections (2)	41	300 x 65
	130 x 60 x 35 (h)	42	390 x 80
		43	405 x 85
14	790 x 50 x 40 (h)	44	215 x 60
15	825 x 75	45	220 x 60
16	205 x 75	46	120 x 50
17	185 x 75	47	315 x 45
18	100 x 75	48	250 x 45
19 (6)	150 x 60	49	410 x 50
20	220 x 85	50	200 x 35
21	225 x 85	51	55 x 35
22	135 x 85	52	100 x 55
23	290 x 110 x 55 (h)	53	105 x 40
24	130 x 65	54	90 x 40
25	280 x 55	55	155 x 60
26	125 x 65	56	120 x 50
	wing 115 x 80	57	230 x 35
27	120 x 80	58	85 x 40
	wing 160 x 70	59 (2)	120 x 50
		60 (8)	170 x 55

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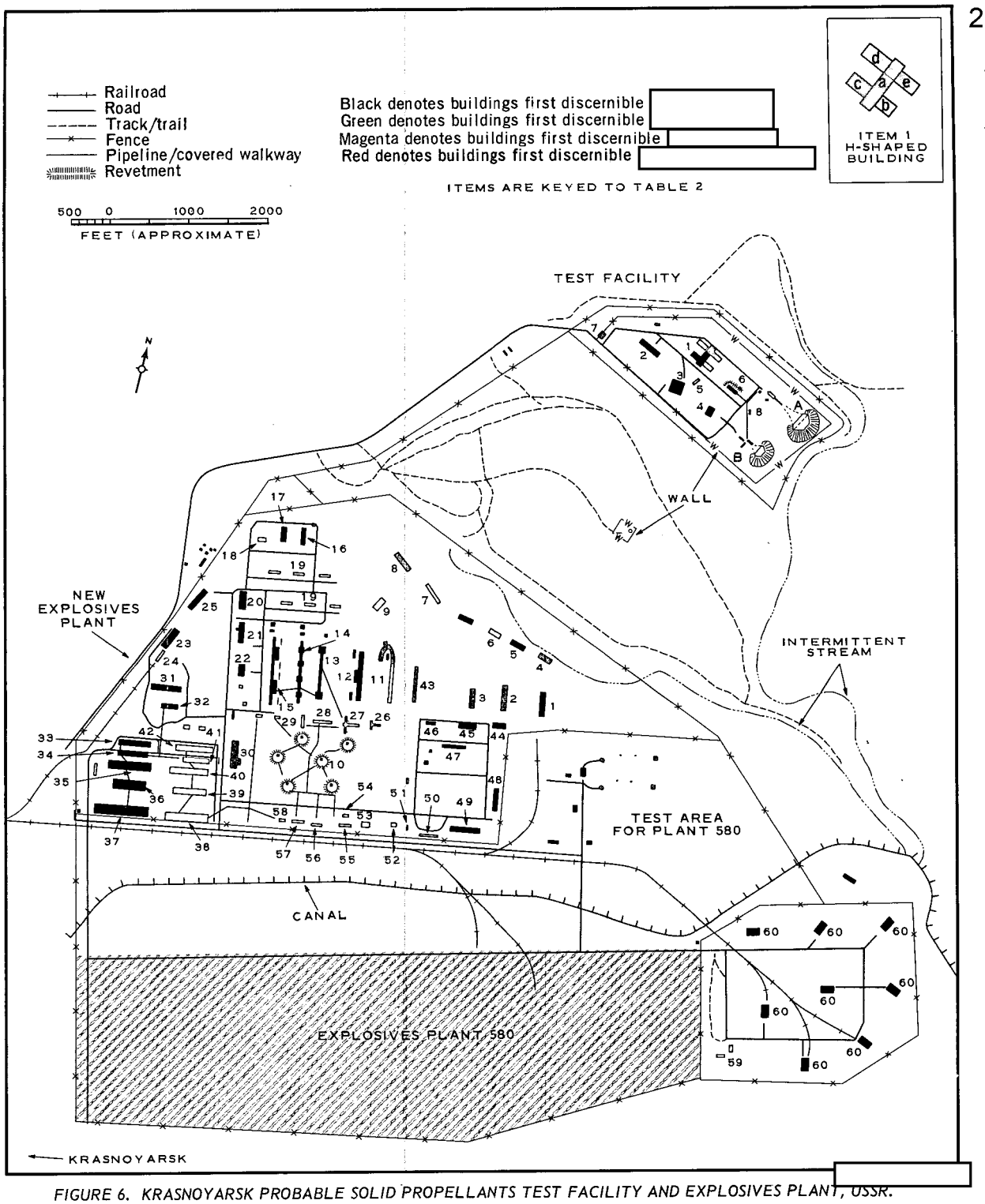

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FIGURE 6. KRASNOYARSK PROBABLE SOLID PROPELLANTS TEST FACILITY AND EXPLOSIVES PLANT, USSR.

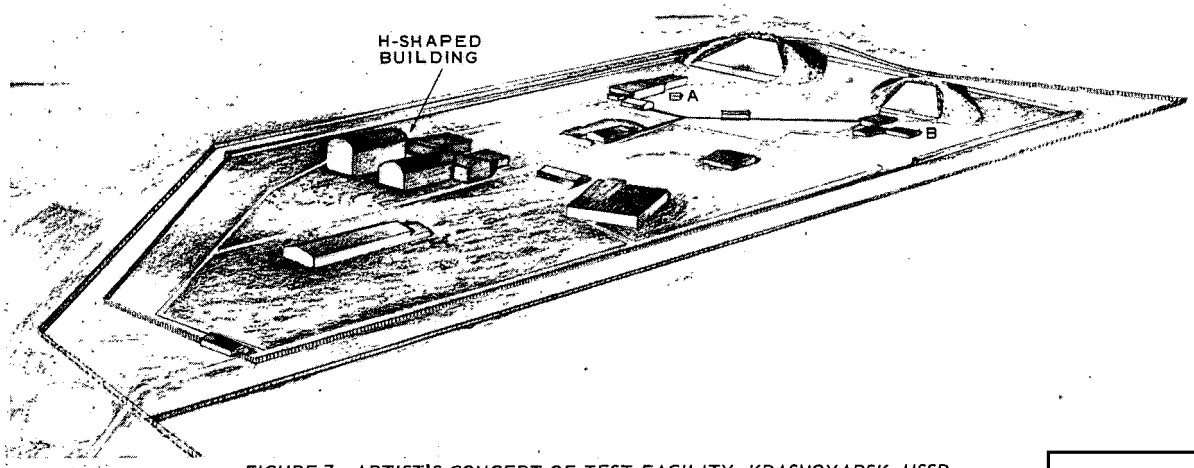

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FIGURE 7. ARTIST'S CONCEPT OF TEST FACILITY, KRASNOYARSK, USSR.

a possible blast mark, no conclusive statement can be made on the basis of the photography available.

PERM

The Perm Probable Solid Propellants Test Facility (Figure 9) is located within the confines of the Perm Munitions and Chemical Combine K. Kirov 98, approximately 13 nm west of the center of Perm, USSR, along the Kama River. This facility cannot be negated on any available photography; when first observed in [redacted] it was in an undetermined stage of construction. The test facility is road and rail served, and the area of approximately 4,500 by 1,700 feet is secured by a single fence. Table 3, which is keyed

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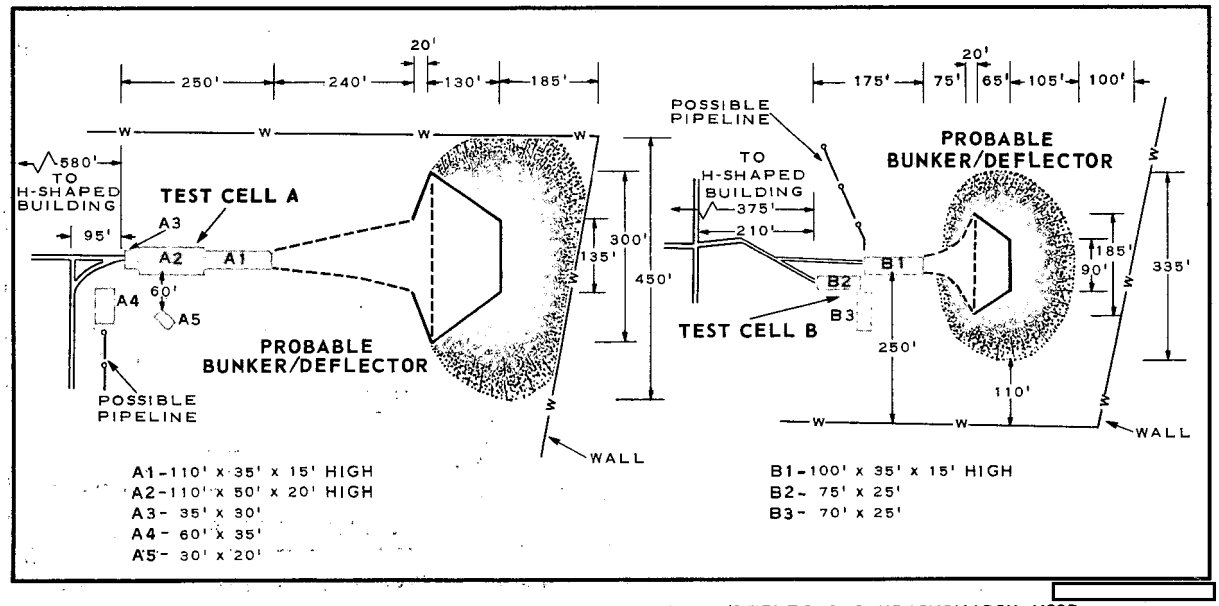

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FIGURE 8. TEST CELLS A AND B AND PROBABLE BUNKER/DEFLECTORS, KRASNOYARSK, USSR.

Table 3. Associated Structures, Perm Probable Solid Propellants Test Facility (item numbers are keyed to Figure 9)

Item	Dimensions (ft)	Item	Dimensions (ft)
1	175 x 75	6	190 x 80
2	180 x 140	7	200 x 65
3	80 x 70	8	225 x 65
4	125 x 55	9	300 x 50
5	150 x 70	10 (4)	90 x 55
		11	120 x 55

to Figure 9, includes dimensions of structures at the Perm facility.

One test cell (annotated A on Figure 9) is within the secured area of the Perm test facility. This test cell is rail served to its front, and is the only cell identified thus far in the USSR which is served in this manner. Although the cell cannot be negated on available photography, it can be confirmed as complete in [redacted] it may 25X1

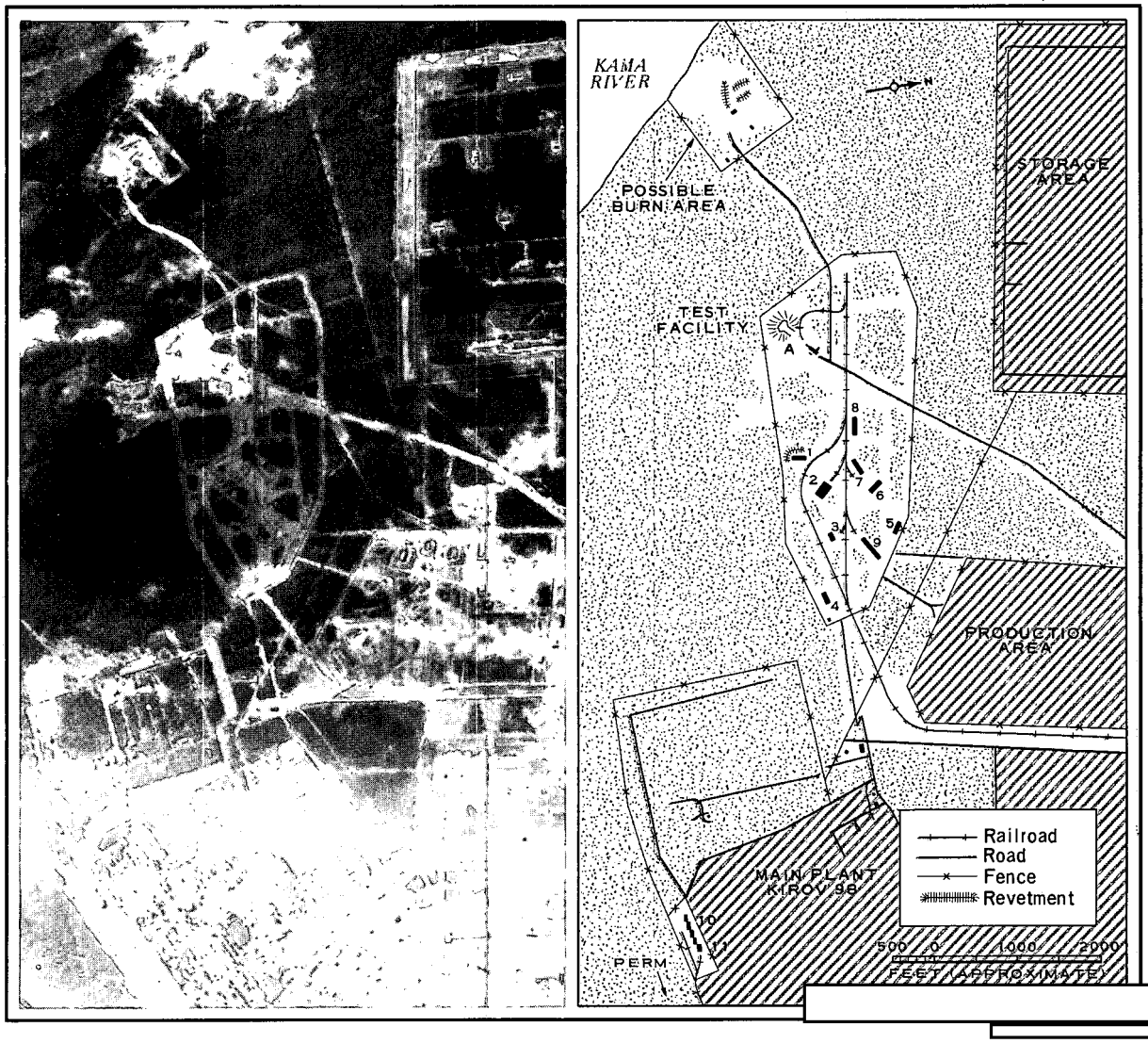

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FIGURE 9. PERM PROBABLE SOLID PROPELLANTS TEST FACILITY AND PORTIONS OF PERM MUNITIONS AND CHEMICAL COMBINE K. KIROV 98, USSR, [redacted]

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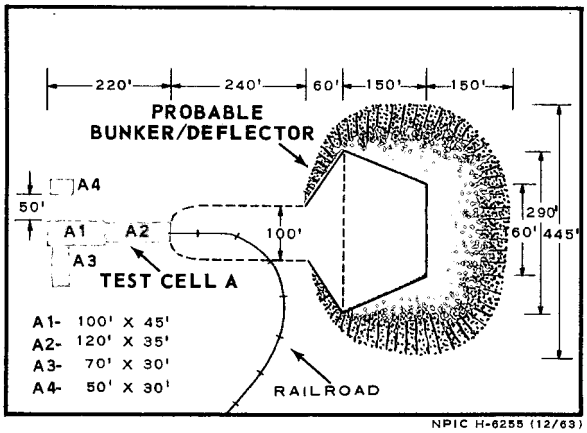

FIGURE 10. TEST CELL A AND PROBABLE BUNKER/DEFLECTOR, PERM, USSR.

be as old as cell B at Krasnoyarsk and therefore possibly one of the oldest in the USSR. The cell is made up of at least two sections and has an overall length of 220 feet.

The concrete-faced probable bunker/deflector (Figure 10) was present in [redacted] 25X1 It is approximately 300 feet long from the base to the front of the test cell. The distance from the rear of the test cell to the rear of the probable bunker/deflector measures over 800 feet.

A group of five offset or staggered buildings (items 10 and 11, Figure 9) which appear to be separately secured from the rest of the associated explosives plant are located about 4,400 feet east-southeast of the test facility and appear to be rail served. These buildings were first discernible on [redacted] photography and are 25X1

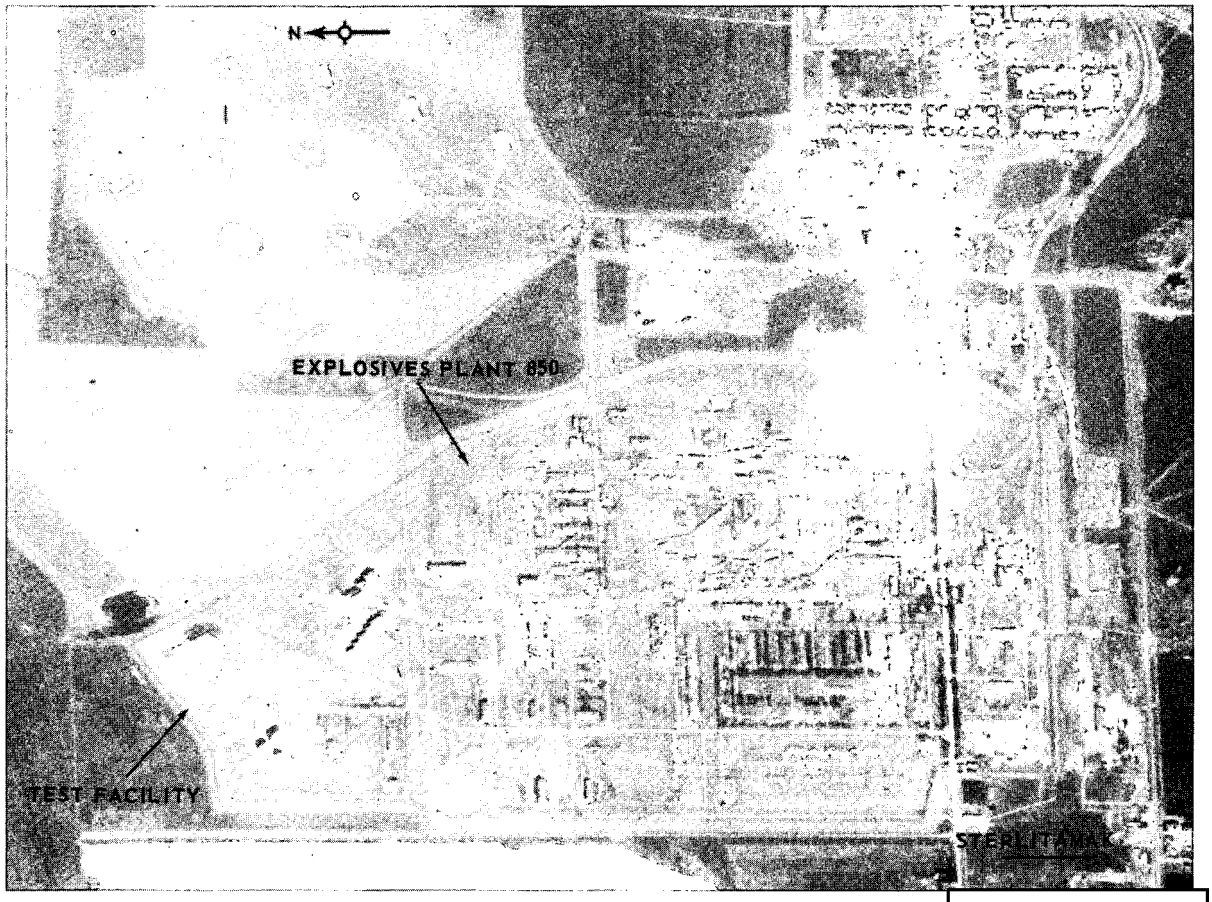

FIGURE 11. STERLITAMAK PROBABLE SOLID PROPELLANTS TEST FACILITY, USSR, [redacted] 25X1

similar in appearance and probably identical in function to those found at Biysk, Kamensk-Shakhtinskiy, and Sterlitamak.

A separately secured area about 1,800 feet west of the test facility measures approximately 1,300 by 1,150 feet. The area has three large, unexplainable, unoccupied revetments; its function may be that of a possible burn area, comparable to the similar area at Biysk.

STERLITAMAK

The Sterlitamak Probable Solid Propellants Test Facility (Figures 11 and 12) is adjacent to Explosives Plant 850, approximately 7 nm north of Sterlitamak, USSR, and about 3 nm west of the Belaya River. Although the test facility can be negated on captured [redacted] photography of [redacted] dating of the initial construction at the facility by photography is not possible. The test facility is road served, and its area of approximately 1,800 by 1,300 feet is partially double secured. It is possible that the outer fence is solid; only a single fence separates the test facility from the explosives plant.

The Sterlitamak test facility has an H-shaped building (item 1, Figure 12) which is similar in appearance and probably identical in function to those at Biysk and Krasnoyarsk. It was first discerned in [redacted] and confirmation as complete was possible on [redacted] photography; it is believed that construction of this structure was nearly complete in [redacted] Approximate dimensions of this building and other structures at the test facility and explosives plant can be found in Table 4 which is keyed to Figure 12.

The test cell at Sterlitamak (annotated A on Figure 12) is served from the front by a wide turn radius road; this is the only facility identi-

Table 4. Associated Structures, Test Facility and Explosives Plant, Sterlitamak (item numbers are keyed to Figure 12)

Item	Dimensions (ft)	Item	Dimensions (ft)	Item	Dimensions (ft)	Item	Dimensions (ft)
1		21	125 x 40	47	380 x 60	69	250 x 70
a	280 x 85	22	165 x 90	48	175 x 65	70	310 x 75
b	95 x 85	23	175 x 75	49	130 x 80	71, 74	310 x 105
c	150 x 80	24	340 x 80	50	170 x 110	72, 73	310 x 90
d	165 x 80	25	525 x 80	51	145 x 60	75	110 x 45
e	125 x 80	26	385 x 70	52	180 x 50		wing
2	110 x 110	27	285 x 70	53	200 x 75		90 x 60
3	110 x 70	28	100 x 30	54	245 x 110	76	365 x 85
4	265 x 90	29	115 x 50	55	255 x 60	77	460 x 110
5 (7)	90 x 60	30	320 x 50	56	250 x 90	78	160 x 90
6	120 x 60	31	110 x 100	57	265 x 60	79	105 x 80
7	100 x 70	32	105 x 40	58	525 x 100	80	80 x 75
8	140 x 70	33	125 x 60	59	180 x 70	81	115 x 85
9	395 x 60	34	175 x 65	60	150 x 50	82	75 x 60
10, 11	170 x 70	35	190 x 90	61 (4)	175 x 45	83	130 x 50
12	105 x 30	36	115 x 90	62 (3)	165 x 40	84	70 x 50
13	220 x 50	37	190 x 40	63 (4)	165 x 70	85	170 x 45
14, 15	170 x 70	38	165 x 80	64	825 x 160	86	85 x 60
16 (2)	each in 2		wing 45 x 45	65	580 x 110	87	200 x 50
	sections:	39	225 x 100	66	280 x 50	88 (12)	210 x 80
	90 x 80,	40	265 x 105	67	2 wings:	89	100 x 60
	90 x 60	41	300 x 140		140 x 20		
17	135 x 65	42	185 x 105		(each)		
18	400 x 50	43	375 x 150		center section:		
19	395 x 60	44, 45	180 x 90		145 x 25		
20 (2)	205 x 40	46	380 x 105	68	390 x 85		

fied thus far in the USSR which is served in this manner. The cell is not revetted or mounded and appeared essentially complete in [redacted] It has at least three sections and measures 250 feet in overall length. The relative position of the cell and other structures at the facility can be seen on Figure 12.

The probable bunker/deflector (Figure 13) can be observed on [redacted] photography; the concrete facing, however, cannot be confirmed until photography of [redacted] The structure is about 260 feet long from the base to the front of the test cell. From the rear of the probable bunker/deflector to the H-shaped building the distance is approximately 1,350 feet. A road serves both the front and the rear of the probable bunker/deflector; this is the only facility in the USSR which has this particular road pattern.

Eight staggered or offset buildings (items 5 and 6, Figure 12) which are possibly rail served are located within the explosives plant and adjacent to the test facility. Three of these buildings were discernible in [redacted] and the others could first be observed on [redacted]

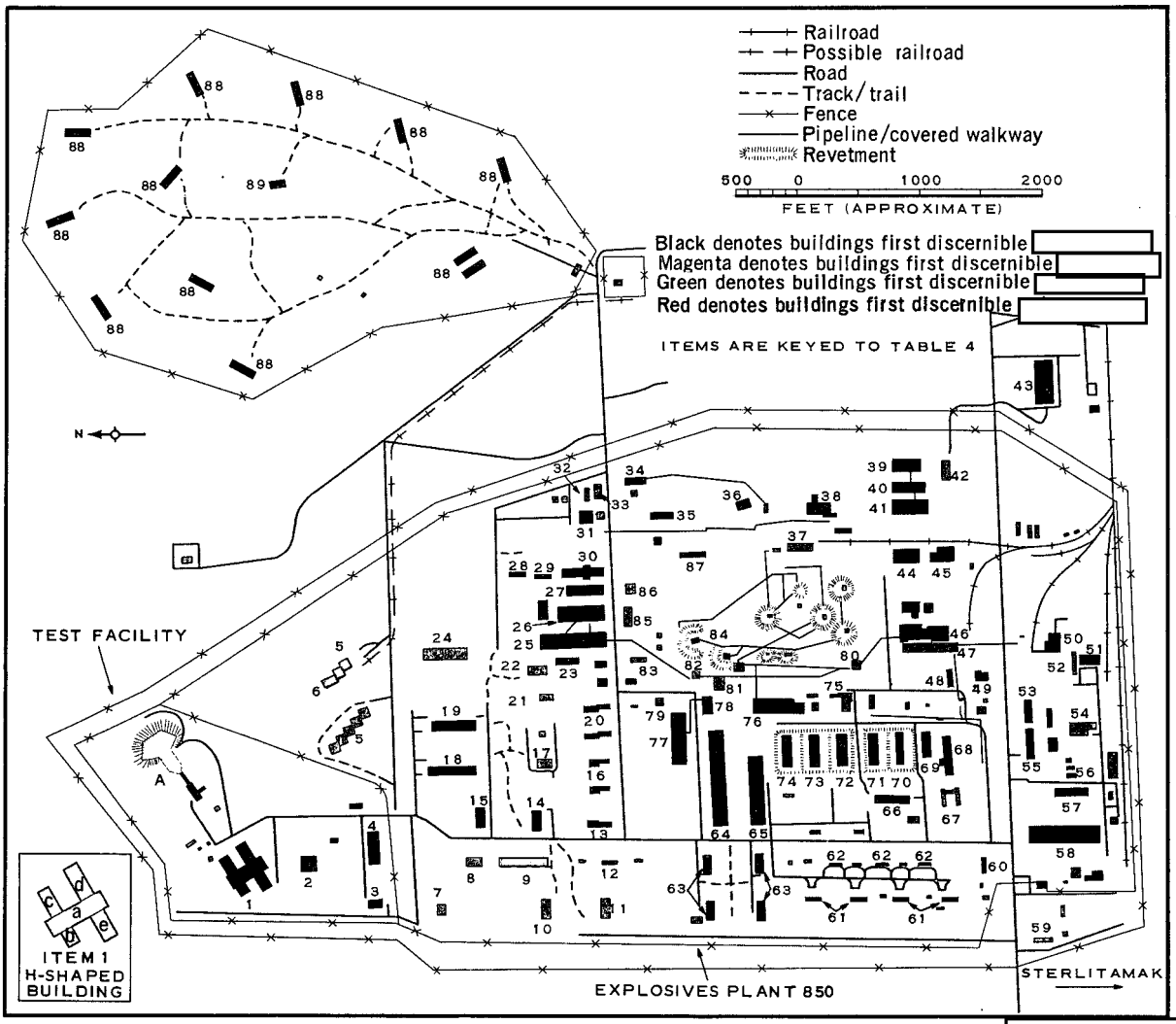

FIGURE 12. STERLITAMAK PROBABLE SOLID PROPELLANTS TEST FACILITY AND EXPLOSIVES PLANT 850, USSR. [redacted]

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25X1 [redacted] photography. The buildings are similar in appearance to buildings at Biysk, Kamensk-Shakhtinskiy, and Perm and probably have an identical function.

THE PLANTS

Each of the four test facilities described is adjacent to a plant which has every evidence of producing at least two explosives bases. Although the buildings in the plants have not been identified as to type, it is apparent that mixing, casting, batching, and related functions could be carried on at each facility. All of the plants are road and rail served and are at least single secured; the plants at Biysk and Sterlitamak are double secured.

With the exception of the Perm plant, each explosives plant has shown significant construction since first photographic observation. The Biysk plant has been expanded by the addition of at least two explosives lines and has at least tripled in storage capacity since [redacted] The Krasnoyarsk plant (Figure 6), built adjacent to Explosives Plant 580, cannot be confirmed as completely constructed as of [redacted] The Sterlitamak plant (Figure 12), though showing less construction activity than the Biysk and Krasnoyarsk plants, has had evidences of construction since it was first observed on photography of [redacted]

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The proximity of facilities to one another within the explosives plants precludes an unqualified, detailed analysis. Once an explosives line is constructed, it can often be used to work on new explosives bases.

CONCLUSIONS

1. There are test facilities at the following five cities in the USSR: Biysk, Kamensk-Shakhtinskiy, Krasnoyarsk, Perm, and Sterlitamak; the five facilities have a total of eight test cells.

2. Because these test facilities are within or adjacent to explosives plants capable of producing at least two explosives bases, the facilities can be considered probable solid propellants test facilities.

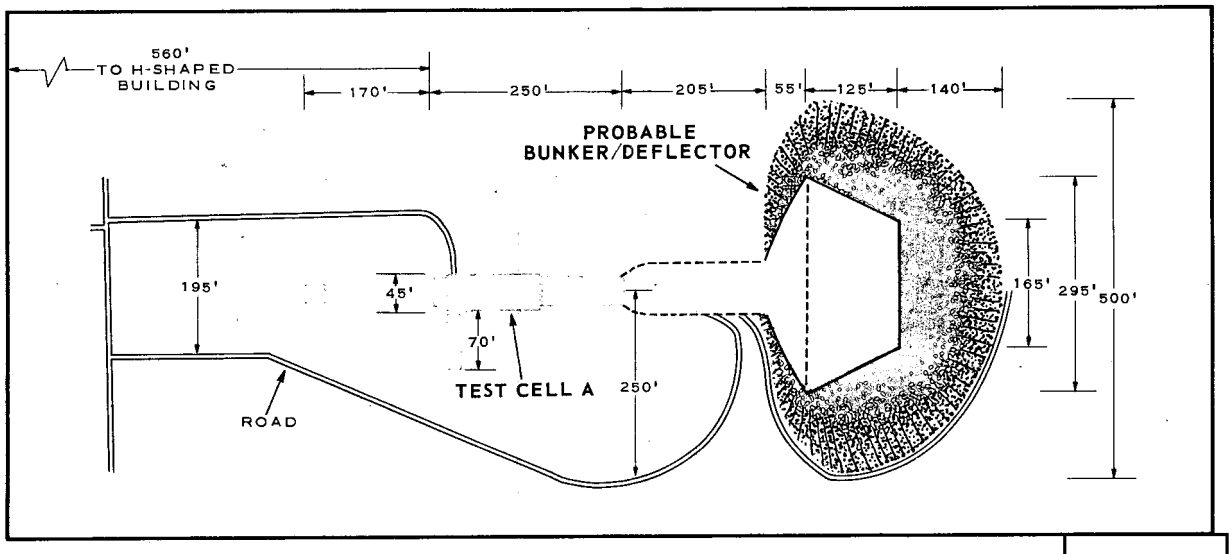

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FIGURE 13. TEST CELL A AND PROBABLE BUNKER/DEFLECTOR, STERLITAMAK, USSR.

3. The probable bunker/deflectors at these sites are concrete faced, suggesting the function of deflector. Road service to both the front and rear of the bunker/deflector at Sterlitamak suggests the possibility of an instrumentation role; Sterlitamak, however, is the only facility at which this road characteristic could be noted.

4. These five facilities could be involved in research and development or production or both. The associated plants appear to have the capacity to produce explosives, while the test facilities at each of the installations have slight differences suggesting the possibility of research and development.

REFERENCES

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REFERENCES (Continued)

[redacted]

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2RTS. US Air Target Chart, Series 200, Sheet 0161-21HL, 2d ed, Aug 62, scale 1:200,000 (SECRET)
ACIC. US Air Target Chart, Series 200, Sheet 0165-15A, 1st ed, Sep 58, scale 1:200,000 (SECRET)
2RTS. US Air Target Chart, Series 200, Sheet 0234-24HL, 2d ed, Jul 63, scale 1:200,000 (SECRET)

REQUIREMENT

CIA. DDI/C-DDI3-80,555

PROJECT

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